CLAIM AMENDMENTS

1 - 77. (canceled)

78. (currently amended) A device for treating neuronal brain pathologies involving the neurons of a large neuron population firing in a synchronized manner, the device comprising:

a plurality of electrodes adapted for stimulating and implanted in respective neuron subpopulations of the large neuron population; and

means connected to the electrodes for generating and feeding therethrough to the respective neuron subpopulations stimulation signals each comprised of a burst of pulses having a respective predetermined frequency capable of resetting the firing of the neurons of the respective subpopulation and with the burst fed to each subpopulation time shifted of the bursts fed to the other subpopulations such that each subpopulation is reset at a different point in time and fires out of phase with the other subpopulations.

79. (previously presented) The device defined in claim 78 wherein each burst includes 1 to 20 pulses.

80. (previously presented) The device defined in claim 78 wherein the bursts are periodically administered by the respective electrodes.

81. (previously presented) The device defined in claim 78 wherein the bursts all have the same time duration.

82. (previously presented) The device defined in claim 78 wherein the bursts are identical.

83. (previously presented) The device defined in claim 78 wherein there are at least three such electrodes and the time offsets between the bursts of the electrodes are identical.

84. (currently amended) A method of treating neuronal brain pathologies in which a large population of brain neurons fire in a synchronized manner, the method comprising the steps of:

implanting electrodes in respective subpopulations of a large neuron population to be desynchronized; and

stimulating each of ~~a plurality of~~ the subpopulations of the large population via the respective electrode with a respective stimulation signal each comprised of a burst of pulses having a respective predetermined frequency capable of resetting the firing of the neurons of the respective subpopulation with the burst fed to each subpopulation time shifted to the bursts fed to the other

subpopulations such that the burst reset the neurons of each subpopulation at a different point in time to fire out of phase with the neurons of the other subpopulations.

85. (previously presented) The method defined in claim 78 wherein each burst includes 1 to 20 pulses.

86. (previously presented) The method defined in claim 78 wherein the bursts are periodically administered by the respective electrodes.

87. (previously presented) The method defined in claim 78 wherein the bursts all have the same time duration.

88. (previously presented) The method defined in claim 78 wherein the bursts are identical.

88. (previously presented) The method defined in claim 78 wherein there are at least three such electrodes and the time offsets between the bursts of the electrodes are identical.

89. (new) The method defined in claim 78 wherein the electrodes are arrayed symmetrically.

90. (new) The method defined in claim 84 wherein the electrodes are implanted symmetrically

91. (new) A device for treating neuronal brain pathologies involving the neurons of a large neuron population firing in a synchronized manner, the device comprising:

a plurality of electrodes adapted for stimulating respective neuron subpopulations of the large neuron population; and

means connected to the electrodes for generating and feeding therethrough to the respective neuron subpopulations stimulation signals each comprised of a burst of pulses having a respective predetermined frequency capable of resetting the firing of the neurons of the respective subpopulation and with the burst fed to each subpopulation time shifted of the bursts fed to the other subpopulations such that each subpopulation is reset at a different point in time and fires out of phase with the other subpopulations and for simultaneously outputting from two of the electrodes identical bursts of pulses but with opposite polarities.

92. (new) A method of treating neuronal brain pathologies in which a large population of brain neurons fire in a synchronized manner, the method comprising the steps of:

stimulating each of a plurality of subpopulations of the large population with a respective stimulation signal each

comprised of a burst of pulses having a respective predetermined frequency capable of resetting the firing of the neurons of the respective subpopulation with the burst fed to each subpopulation time shifted to the bursts fed to the other subpopulations such that the burst reset the neurons of each subpopulation at a different point in time to fire out of phase with the neurons of the other subpopulations; and

simultaneously outputting from two of the electrodes identical bursts of pulses but with opposite polarities.

93. (new) A device for treating neuronal brain pathologies involving the neurons of a large neuron population firing in a synchronized manner, the device comprising:

a plurality of electrodes adapted for stimulating respective neuron subpopulations of the large neuron population; and

means connected to the electrodes for generating and feeding through a subset thereof to the respective neuron subpopulations stimulation signals each comprised of a burst of pulses having a respective predetermined frequency capable of resetting the firing of the neurons of the respective subpopulation and with the burst fed to each subpopulation time shifted of the bursts fed to the other subpopulations such that each subpopulation is reset at a different point in time and fires out of phase with

the other subpopulations and for varying the subset used for stimulation by using a stochastic or deterministic algorithm.

94. (new) A method of treating neuronal brain pathologies in which a large population of brain neurons fire in a synchronized manner, the method comprising the step of:

selecting a subset from a plurality of electrodes implanted in respective subpopulations of a large population of neurons;

stimulating each of the subpopulations of the large population of electrodes from the subset with a respective stimulation signal each comprised of a burst of pulses having a respective predetermined frequency capable of resetting the firing of the neurons of the respective subpopulation with the burst fed to each subpopulation time shifted to the bursts fed to the other subpopulations such that the burst reset the neurons of each subpopulation at a different point in time to fire out of phase with the neurons of the other subpopulations; and

varying the subset used for stimulation by using a stochastic or deterministic algorithm.